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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/478,370	02/16/2000	KIICHI HAMA	7363.0010	1598

7590 02/13/2002

FINNEGAN HENDERSON FARABOW
GARRETT & DUNNER LLP
1300 I STREET N W
WASHINGTON, DC 200053315

EXAMINER

ALEJANDRO MULERO, LUZ L

ART UNIT	PAPER NUMBER
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1763

DATE MAILED: 02/13/2002

17

Please find below and/or attached an Office communication concerning this application or proceeding.

MF-17

Office Action Summary

Application No.

09/478,370

Applicant(s)

HAMA ET AL.

Examiner

Luz L. Alejandro

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10/11/01 (RCE).
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-164 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-164 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☒ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

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DETAILED ACTION

Reissue Applications

The reissue declaration filed on 09/06/01 is defective (see 37 CFR 1.175 and MPEP § 1414) because of the following: the oath or declaration must be signed and dated by all the applicants. In particular, one of the applicants, Mr. Kiichi Hama, signed but did not date the declaration.

Claims 1-164 are rejected as being based upon a defective reissue declaration under 35 U.S.C. 251 as set forth above. See 37 CFR 1.175.

The nature of the defect(s) in the declaration is set forth in the discussion above in this Office action.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was

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not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 85-87, 90, 92-93, 99, 120-121, 126, 128-129 and 135-136 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cuomo et al., U.S. Patent 5,280,154 in view of Ogle, U.S. Patent 4,948,458.

Cuomo et al. shows the invention as claimed including an apparatus 10 for processing a process region of a substrate 40, using a plasma, the apparatus comprising: a container substantially formed of a conductive material (see col. 4, lines 3-5); a window partition plate 26 supported on an inner surface of the container, made of dielectric, and defining an air-tight process container portion 12 and an air-tight auxiliary container portion 48,50 (see col. 4, lines 5-9); a work table 36 arranged in the process container portion and having a support face facing the window plate, the substrate being mountable on the support face with the process region facing the window plate (see figure 1); a main supply 30 for supplying a process gas between the window plate and the substrate mounted on the support face, at least part of the process gas being transformable into the plasma (see col. 4, lines 9-11); a coil 14 for generating an electromagnetic field between the window plate and the substrate mounted on the support face to induce generation of the plasma arranged in the auxiliary container portion and facing the window plate (see figure 1); a power supply 60 for applying a high frequency voltage to the coil; and valves for controlling the

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admission of the gas into the chamber and valves and exhaust pumps for purging the gas from the chamber and for drawing a vacuum inside the chamber (see col. 3, lines 22-24, and col. 4, lines 9-18). It is inherent that the above mentioned valves and pumps are pressure controllers that are used for controlling the pressure in the process container at a predetermined or desired value (see col. 5, lines 13-16). Also, it would be inherent that since the pressure in the process container can be controlled to a desired pressure, a pressure difference between the pressure in the process container and the pressure in the auxiliary container can be controlled to be lower or higher or the same as a predetermined value.

Cuomo et al. apparatus further comprises grounding means for grounding said container (see col. 4, lines 60-64); a lower electrode arranged in the work table and a power supply for applying a high frequency potential to the lower electrode (see figure 1 and col. 4, lines 32-35); and the apparatus can be used as a plasma depositing apparatus (see col. 8, lines 15-17).

Cuomo et al. does not expressly disclose that the coil is a planar spiral coil. Ogle discloses a plasma processing apparatus that uses a planar spiral coil 20 (see col. 4, lines 31-35, and figs. 1-3) in order to generate highly uniform planar plasmas over very wide pressure ranges (see col. 3, lines 3-18 and col. 6, lines 39-49). Therefore, in view of this disclosure, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the apparatus of Cuomo et al. as to comprise a planar spiral coil, in order to optimize the apparatus, since in such way highly uniform planar plasmas can be generated. Moreover, with respect to the planar spiral coil

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having a quadrilateral outer configuration, changes in shape are obvious absent persuasive evidence that the particular configuration is significant (In re Dailey, 357 F.2d 669, 149 USPQ 47 (CCPA 1966)).

With respect to claims 90 and 126, Cuomo et al. does not expressly disclose a seat which supports the coil. Ogle discloses a plasma apparatus in which a coil 20 is supported by port 14 (see figures 1-2, and col. 5, lines 41-42). In view of this disclosure it would have been obvious to one having ordinary skill in the art at the time the invention was made to further comprise a seat on the dielectric plate in order to arranged and support the coil.

Claims 88-89, 119, 122 and 164 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cuomo et al., U.S. Patent 5,280,154 in view of Ogle, U.S. Patent 4,948,458, as applied to claims 85-87, 90, 92-93, 99, 120-121, 126, 128-129 and 135-136, above, and further in view of Benzing et al., U.S. Patent 5,346,578.

Cuomo et al. and Ogle are applied as above but do not expressly disclose a cooler, for controlling the temperature of the coil, having a coolant flow passage. Benzing et al. disclose a plasma apparatus in which cooling means 440, 442, 444, 446 are used to cool the coil (see figure 5 and col. 5, lines 17-23). In view of this disclosure it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the apparatus disclose by Cuomo et al. and Ogle as to further comprise cooling means for cooling the coil as to maintain the temperature of the coil within a desired value.

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The claimed thickness of the dielectric window, claims 119 and 164, is considered to involve routine optimization while has been held to be within the level of ordinary skill in the art. Therefore, one of ordinary skill in the art at the time the invention was made would have modified the apparatus of the Cuomo et al. reference, by using a dielectric window having a thickness of approximately 30 mm- 50 mm in order to optimize the apparatus.

Claims 94-98 and 130-134 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cuomo et al., U.S. Patent 5,280,154 in view of Ogle, U.S. Patent 4,948,458, as applied to claims 85-87, 90, 92-93, 99, 120-121, 126, 128-129 and 135-136, above, and further in view of Itoh, U.S. Patent 4,817,558.

Cuomo et al. and Ogle are applied as above but do not expressly disclose the claimed first and second gas supply members for supplying first and second gases, respectively. Itoh discloses an apparatus wherein different process gases are introduced into the processing chamber through two different gas introduction ports (a first gas supply port 5b and a second gas supply port 5a) for independently controlling the introduction of each gas to the processing chamber and the flow rate of each gas (see figure 1, col. 3, lines 58-66, and col. 5, lines 12-18 and 32-39). In view of this disclosure, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the apparatus of Cuomo et al. and Ogle, as to comprise first and second gas introduction ports, as taught by the Itoh reference, as to independently control the introduction of the gases to the chamber and their respective

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flow rates. The Examiner takes official notice that gas supply ports made of a dielectric material are known and used in the art and thus would be prima facie obvious to use in the apparatus of Cuomo et al. and Ogle because of their good stability under high temperature environments.

Response to Arguments

Applicant's arguments with respect to the rejected claims have been considered but are moot in view of the new ground(s) of rejection.

Moreover, applicant's declaration filed under 37 C.F.R. 1.171 made by Mr. Kiichi Hama, is in direct conflict with the original declaration filed under 37 C.F.R. 1.175. The declaration filed under 37 C.F.R. 1.171, alleges unexpected results with respect to the shape of the coil. However, the original declaration filed under 37 C.F.R. 1.175, states on page 3, lines 8-10, "Moreover, patentability of the invention is not related to any particular shape or configuration of induction electrode or antenna". Therefore, the declaration filed under 37 C.F.R. 1.171 is not persuasive.

Allowable Subject Matter

Claims 1-84, 91, 100-118, 123-125, 127, 137-163 would be allowable if the rejection under 35 U.S.C. 251 (defective reissue declaration) set forth in this Office action is overcome.

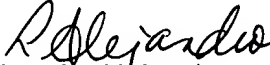
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Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Luz L. Alejandro whose telephone number is 703-305-4545. The examiner can normally be reached on Monday to Thursday from 7:30 to 6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory L. Mills can be reached on 703-308-1633. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.


Luz L. Alejandro
Patent Examiner
Art Unit 1763

February 10, 2002
